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Review Essay[1]

Transitioning to a Green Economy? Conflicting Visions, Critical Opportunities and New Ways Forward

Christian de Perthuis and Pierre-Andre Jouvet, *Green Capital: A New Perspective on Growth*. Translated by Michael Westlake. New York and Chichester, West Sussex, Columbia University Press, 2015. 274 pp. £ 20.75 hardcover

Michael Jacobs and Mariana Mazzucato (eds), *Rethinking Capitalism: Economics and Policy for Sustainable and Inclusive Growth*. Chichester, West Sussex: Wiley Blackwell, 2016. 225 pp. £ 14.99 paperback

Giacomo D'Alisa, Federico Demaria and Giorgos Kallis (eds), *Degrowth: A Vocabulary for a New Era*. New York and London: Routledge, 2015. 220 pp. £ 18.18 paperback

Ole Bjerg, *Parallax of Growth: The Philosophy of Ecology and Economy*. Cambridge and Malden, MA, Polity Press, 2016. 252 pp. £ 17.99 paperback

INTRODUCTION

In respect of environmental politics, there are a number of ways one might characterise the state we find ourselves in. One would simply be to highlight the perilous state of the planet in light of human behaviour associated with industrialisation and urbanisation (Global Biodiversity Outlook 4 2014; IPCC, no date). Another would be to highlight the difficulties we seem to face in responding to these challenges. The Paris Agreement of 2016 was an important step forward but there remain profound questions about implementation and not just because of the withdrawal of the US under President Donald Trump (Anderson 2015; BBC 2017; McGrath 2017). Related to this, ecology or environmentalism still seems to be regarded in certain quarters as a bit of a fringe activity – remarkably in the circumstances. We see this at a popular level in terms of a certain societal irritation with those who bang this drum. However, we also see it at an academic level, where within development studies, environmentalism is still not entirely mainstream. For example, in certain development journals, it is not uncommon to find articles which simply seek to understand the determinants of economic growth without any reference to whether it is reasonable to think about 'development' simply in terms of growth (Ahlerup et al 2016; Brandt and Thun 2016; D'Agnostino et al 2016; Havranek et al 2016; Neves et al 2016; Prieger et al 2016; Wilson 2016).

Beyond this seeming 'business as usual' perspective, two other perspectives commonly dominate. One is the so-called green capitalism or green growth perspective, which argues that with the help of technology and the knowledge

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economy, economic growth can be maintained while also safeguarding the planet (Brockington 2012; Lander 2011; Sachs 1999). The other perspective is that of degrowth. Degrowth takes the opposite perspective, arguing that it is fanciful to think that technology can save the day, and advocates instead that we need to de-grow, whatever exactly that means (Demaria et al 2013; Fournier 2008; Kallis 2011; Martinez-Alier 2009; Martinez-Alier et al 2010; Splash 2015). The green growth perspective has the ear of policymakers to the extent that anyone does. Degrowth, meanwhile, is generally confined to the side-lines and is often ridiculed by more 'mainstream' voices. The field is, therefore, polarised. People tend to inhabit one or other of the camps and it is rare to encounter scholarship which seeks to have a conversation across or between diverse perspectives.

It is, however, the relative polarisation of the environmental politics field which provides the backdrop and starting point for this Review Essay. For this author, the polarisation is puzzling. How is it that on something as fundamental as the future of our planet, we are so divided? Is it not possible to see the future a little more clearly? Reviewing four recent books in the field, which cover a diversity of views, the essay lays the arguments of the green growth and degrowth perspectives alongside each other. In contrast to some other literature, it seeks not to be too quick to dismiss one approach or another but instead wishes to clarify the points of disagreement and the reasons for them. More than this, the essay is open to the way in which on closer scrutiny both the green growth and the degrowth approaches may in fact be found to be deficient.

The essay is structured as follows. After reviewing two books in the green growth tradition, we then review a book written from a degrowth perspective. We then take stock of what we have learnt before introducing a fourth text (*Parallax of Growth*), which introduces a fresh perspective into the debate and points us in new and exciting directions. Finally, we pull together our findings in the Conclusion. The essay's argument is that while there is a tendency for policymakers and scholars to gravitate either to the green growth or degrowth camps, both approaches leave important questions unanswered, notably in terms of *explaining* our preoccupation with growth. The essay concludes that unless we understand better why we are so attached to growth the prospects for tackling the environmental challenges we face are dim. This is where further work is required, including thinking through how such arguments should be articulated to doubting publics.

GREEN GROWTH: A WIN-WIN PERSPECTIVE?

Green Capital, co-authored by Christian de Perthuis and Pierre-Andre Jouvet, and *Rethinking Capitalism*, edited by Michael Jacobs and Mariana Mazzucato, are books by economists and are firmly located in the 'green growth' camp. While the books complement each other, their strengths lie in different areas. *Green Capital*'s contribution lies in encouraging us to think of the environment not as a 'scarce resource' as is usual in economics but rather as a series of 'regulatory systems' that help protect our 'natural capital', understood as the stock of natural ecosystems that generate a flow of valuable goods and services (pp. 1-2). Drawing on work by the Stockholm Resilience Centre, they define these regulatory systems as a series of planetary boundaries, the crossing of which risks abrupt and irreversible environmental damage. One of these regulatory systems is the climate system but the book reminds us – helpfully given recent heavy focus on climate change – that

there are eight other regulatory systems, namely ocean acidity; the ozone layer; atmospheric concentrations of natural and man-made gases/particles; the maintenance of biodiversity; soil fertility; the freshwater cycle; the accumulation of certain kinds of chemicals; and the phosphate and nitrogen biochemical absorption cycles (pp. 51-53).

De Perthuis and Jouvet's point is that because historically we have not put a price on natural capital, or rather its damage, it has not been taken into account in investment decisions, for which we are now paying the price. Their response is to introduce damage to natural capital as a third factor of production in investment decisions, placing it alongside the usual other two, namely capital and labour. While some progress has been made in terms of a tax on $C0_2$ emissions (the so-called carbon tax), it is still very tentative while in respect of putting a price on damage to other regulatory systems we have scarcely begun (Clark 2016).

The effect of not putting a price on damage to natural capital can be illustrated most clearly with reference to so-called peak oil (i.e. the point at which oil extraction would start to decline owing to a fall-off in recoverable supplies). The irony is that peak oil predictions have repeatedly been put back not only because of improved extraction techniques but also because whenever the price of oil rises in the face of supply shortages it becomes commercially viable to extract oil from hitherto too difficult to reach locations. This is precisely because the market is operating with just two factors of production rather than three. If one set the carbon price correctly, eventually, regardless of the oil price, stocks would stay in the ground, or at least they would (some say) until we have developed viable forms of carbon capture. Meanwhile, the idea is that putting a price on, say, $C0_2$ emissions would encourage companies to invest in alternative energy sources, such as renewables. *Green Capital* is really about the ins and outs of how one does this – how you fix the carbon price, the difficulty of putting a price on some of the other regulatory systems, the question of who pays (e.g. capital, labour or both), and the consequences of such a transition for competitiveness and equity. For de Perthuis and Jouvet, noting the rather ubiquitous use of the 'green' label, green growth is only truly green when it puts a price on natural capital.

Continuing in the green growth paradigm, *Rethinking Capitalism* introduces itself as being concerned with failure – two failures in fact: first, the "near collapse" of Western capitalism in the 2007-2008 financial crash, and its ongoing problems since then, including uncertain growth prospects, levels of inequality not seen since the nineteenth century, and serious global environmental pressures, notably climate change. The second failure which *Rethinking Capitalism* examines is the failure of most economists to see the 2007-2008 crash coming. The book argues – refreshingly given the rather establishment pedigree of its authors – that mainstream economic thinking of the neo-classical kind which has dominated policymaking since the Reagan/Thatcher eras is not up to the task of understanding the multiple crises which contemporary economies now face, including dangerous environmental risk. What is needed is a much more sophisticated understanding of how markets work, including the businesses within them. "Capitalist economies are not theoretical abstractions," they write, echoing Karl Polanyi and the more recent evolutionary, institutional and post-Keynsian schools of economics. Rather, markets are "complex and dynamic systems, embedded in specific societies as well as in environments governed by biophysical laws." (pp. 17-

18). Furthermore, their problems are not failures of markets which 'normally' succeed but are intrinsic to the very character of markets as they have been established (p. 18). *Rethinking Capitalism* seeks to follow through on these insights looking at areas ranging from macroeconomic policy to public sector outsourcing and inequality and economic growth. Not all the book's chapters are directly pertinent to this review. However, a number are, notably those dealing with questions of technological and organisational innovation, which seek to explain how a green transition might take place.

From a green growth perspective, innovation is critical if we are to reduce and eventually eliminate greenhouse gas emissions and hence limit dangerous climate change. Dimitri Zenghelis, former head of the Stern Review Team at the Office of Climate Change in London, who authors a chapter on decarbonisation and innovation, argues that very shape and structure of capitalism will need to change if we are to control greenhouse gas emissions sufficient to limit a rise in global temperatures to 2^{o}C above pre-industrial levels. His point is that this will not be achieved unless there is a "profound change" in the way in which goods and services are produced, distributed and consumed – a demanding task if ever there was one. As Zenghelis reminds us, climate change is a collective action problem, a tragedy of the commons. To decarbonise, one needs to build what are presently more expensive energy, transport, industrial, agricultural and urban systems. As one does this, assets and activities based on fossil fuels will decline in value, meaning that any such transition will face opposition. However, climate change also suffers from 'the tragedy of the horizon', namely that because the benefits will principally accrue to future generations it is hard to persuade people to act now.

So, how will this transition occur? Key, Zenghelis says, is the right combination of policies required to cut greenhouse gas emissions. Like de Perthuis and Jouvet, carbon pricing is one of these policies, he says. However, there are others as well, including regulatory measures such as energy efficiency standards and, crucially, innovation policy such as R&D expenditure and deployment subsidies where technological and structural change is required.

A recurring theme in *Rethinking Capitalism* is the central role of government in any kind of transition. Underlining the extent to which mainstream economic thinking has evolved, this includes 'picking winners' – to echo classic developmental state language – where the state identifies and supports companies expected to lead the way in developing new technologies and markets. If the state is to drive innovation in a low carbon direction it needs to support it through funding policy in both R&D and deployment, Zenghelis says. This is because investment in new fields carries high start-up costs and risks. In terms of the balance between expenditure on R&D and on deployment, the received wisdom is that twice as much investment is needed in R&D than deployment. However, in practice, government funding is usually massively skewed towards deployment.

It is not just about government policy though. It is also about politics. This includes a willingness on the part of government to take on entrenched interests and not give in to incumbent lobbies. It also includes providing support to companies as they transition into cleaner sectors or to support the redeployment of labour where companies cease operating altogether. Industry will protest, Zenghelis notes, in the

face of climate change policy, arguing that it will make them uncompetitive or force them to relocate elsewhere but the reality is that under pressure innovation will occur. He cites the European car industry, which has successfully cut vehicle emissions, by way of an example (pp. 184-185). The key in all this is consistency – i.e. consistent and credible policy signals over time. This way, the necessary investment in innovation and technology will take place.

Can the necessary technological breakthroughs be achieved at the required speed? For Zenghelis, the outlines of such a transformation are already visible (e.g. nuclear and renewable energy combined with electricity storage, electric vehicles and/or the use of hydrogen cells based on clean energy sources, smart buildings, transport systems and cities, and greater energy efficiency). Ultimately though, we won't know if the technological breakthroughs are possible until we try, Zenghelis says. However, he is scathing of those who think we cannot do it:

> "No economic modeller has more than the faintest ability to predict the technologies which will be available for emissions reductions even forty years hence, let alone eighty; and even less their costs"

He continues:

> "Assuming that after eighty years of investing in and learning from technologies to harness and store renewable energies, it will still be cheaper to extract, transport and burn fossil fuels, is akin to predicting in 1900 that the costs of moving from the horse and cart to the combustion engine would be prohibitive, based on anticipated technologies at the time"

What about the implications for economic growth? Here Zenghelis is also optimistic (like others in the book and also his fellow travellers de Perthuis and Jouvet). Challenging the view that remaining within the planet's ecological limits will mean an end to growth, he argues that decarbonisation is possible while maintaining economic growth for two reasons: firstly, growth will continue as we harness non-carbon-based sources of energy, notably solar and wind resources; and secondly, the transition of economies towards knowledge capital and information-based goods and services will also drive growth (p. 177). Green growth advocates do not believe that economic growth can defy the laws of thermodynamics. That is, they accept that the material economy must eventually attain a steady state in terms of the sustainable use of resources, and that the throughput of materials and energy and the resulting problem of waste disposal will remain a key issue. However, they think that technological progress can in principle support continued growth in value "because the intellectual economy is unbounded" (pp. 177-178).

Another important chapter in *Rethinking Capitalism* is the one by Carlota Perez, who offers an historical analysis of patterns of technological innovation. Noting that we have seen five technological revolutions since around 1770, all of which have driven successive surges in development, she sees patterns in terms of how technology has been assimilated. On the whole, it takes 50 or more years for each new technological breakthrough to truly permeate society/the economy, she says, with two distinct phases – an initial 'installation' phase and a subsequent 'deployment' phase when the fruits of the technology are more widely rolled out. What is striking, Perez notes, is

that in all five technological revolutions, the installation phase has been accompanied by a bubble economy and subsequent collapse/recession, prior to the deployment phase. In terms of our present ICT age – Perez's fifth technological revolution which she dates to the launch of Intel's microprocessor in 1971 – the assertion is that we are living through just this kind of recession following the Dot-com bubble of 1995-2001. (The previous boom/bust period was the 1920s/1930s which followed the launch of Ford's Model T car ushering in the age of mass production.) In terms of our present era, the cause for optimism, Perez says, is that each crash has been followed by a golden age – the most recent being the post-World War Two period. Perez' point is that the downturn creates the political conditions for the deployment phase. However, again, the role of the state is important to guide the direction innovation takes and encourage investment as people are naturally risk averse in the wake of a downturn.

As yet, the ICT revolution has done little to tackle unsustainable mass consumption associated with the post-war development model. However, the deployment phase still has 20-30 years to run, Perez says, arguing that while we have seen a number of new products along with changed consumption patterns over the last two decades off the back of new technology, its ability to "transform" every single industry and activity is only in its "early stages" (p. 199). Perez – like Zenghelis – is therefore optimistic about our ability to combine sustainability with growth through technological innovation, including reducing material and energy consumption and increasing the proportion of services and intangibles in GDP as well as in lifestyles (p. 200). While there is much of insight in Perez' writing, it is not always clear what practically the changes she anticipates will look like, especially how far this notion of 'dematerialised' living can actually be taken. We will return to this later.

DEGROWTH: A MORE REALISTIC WAY TO GO?

Degrowth, edited by Giacomo D'Alisa, Frederico Demaria and Giorgos Kallis, has come out of the Autonomous University of Barcelona, where all three editors are based. It is written in the form of a quasi-dictionary with some fifty short chapters covering key concepts relating to the degrowth movement. There are chapters on anti-utilitarianism, capitalism, conviviality, dematerialisation, growth, peak oil, basic and maximum income, eco-communities, urban gardening, and *Buen Vivir* ('good living'). Reading this book requires something of a gear change compared with the two previous books but it is a useful window onto some of the arguments in the degrowth field. Moreover, it is worth taking time to understand what is being said as it is easy to mis-hear people writing from this perspective. In part, this is because degrowth is about 'decolonising an imaginary' – i.e. the common-sense idea that economic growth is desirable. (In this respect, degrowth has a lot in common with post-development, which is also about decolonising an imaginary.) Therefore, if we find ourselves quickly dismissing degrowth, we need to at least entertain the possibility that we may be victims of the very colonisation of which they speak. This does not mean ultimately that we have to agree with degrowth ideas but it is worth taking time to hear them, not least because they raise fundamental questions about things we take for granted.

The first thing to note about degrowth is that it is a broad church, encompassing a wide of views and perspectives. So, for example, while the book's editors speak with a common voice, they acknowledge that among their contributors there is greater

diversity, which they see as healthy. Degrowth, they say, “expresses an aspiration” (p. xxi). It cannot be “pinned down in a single sentence” (p. xxi). Rooted in the radical and critical tradition, it is a “frame” where different lines of thought, imaginaries and courses of action come together” (p. xxi). Moreover, people coalesce around the degrowth umbrella for a variety of reason. For some, it is about maintaining prosperity without growth. For others, it is a quest for a more egalitarian society where capitalism and “its insatiable pursuit of expansion” is the source of the problem. For others still, degrowth simply provides a focus for how they want to live (e.g. simplicity, conviviality etc).

While degrowth first surfaced as an idea in the early 1970s with its origins in ecology, ecological economics and bioeconomics, it has experienced something of a revival since the 2000s, notably in Europe, and it is in this context that this book has emerged. For its editors, degrowth is not only about downscaling production and consumption to reduce the throughput of energy and raw material – although this is part of it. It is also about doing things differently socially and politically (i.e. degrowth aims to be more all-encompassing). The editors write:

> “In a degrowth society everything will be different: different activities, different forms and uses of energy, different relations, different gender roles, different allocation of time between paid and non-paid work, different relations with the non-human world” (p. 4)

The wider social and political dimensions to the degrowth movement is further evident when the book’s editors elaborate on the rational for pursuing degrowth. It is not just because of their sense of the planet’s ecological limits or their sense that sustainable development (or green growth) is an oxymoron. Rather, degrowth is worth pursuing, they say, out of a desire for autonomy, which can mean a number of different things, ranging from freedom from wage labour, freedom from complex systems, which are viewed as non-egalitarian and undemocratic, or because degrowth simply points to a better way to live.

Other reasons cited by the book’s editors to justify their stance include the view that growth, and its associated commodification, erode social relationships; that above a certain level growth does not increase happiness; and because growth, they say, is unjust. On the latter point, they cite two reasons: first that growth is sustained by “invisible reproductive work in the household”, especially involving women; and second because “growth benefits from unequal exchange between core and periphery” both within and between nations (p. 6). (There is more to say on some of these points and we will come back to them.)

On the so-called ‘green growth’ alternatives, the editors argue that while decarbonisation is possible in theory (e.g. with the advance of cleaner or more efficient technologies), the degree of decarbonisation needed is so extensive, it is impossible to achieve in practice. Here, they cite the level of decarbonsation achieved between 1980 and 2007 and, on this basis, conclude carbon emission targets required by 2050 to stem global warming cannot be achieved (p. 7). They also comment that some of the claims of lower $C0_2$ emissions are misleading because sometimes they have been achieved by exporting polluting industries to other countries. In addition, they question whether technological progress can deliver the sustainable solutions which are

anticipated, citing the so-called Jevons paradox, which says that the gains brought about by technological progress are often swallowed up by higher levels of consumption (p. 7). An often cited example relates to cleaner cars with the argument being that gains from emission reductions have been eroded as the number of the cars on the road has risen. Lastly, the degrowth authors of this book are unconvinced that the economy can be 'dematerialised' to the extent that green growth advocates say, pointing out that the service sector and/or the knowledge economy both rely heavily on rare materials and energy (p. 7).

In terms of what a degrowth transition would actually look like and how it would occur, while in one sense the vision is clear – i.e. it would be world which used fewer resources – the fine details of any transition and what exactly it would look like are much less clear. The editors themselves acknowledge that there is no agreement regarding the politics of how "alternative institutions imbued with degrowth values" would "replace current institutions of capitalism" (p. 14). Moreover, while most degrowth advocates would argue that there is a "fundamental incompatibility" between capitalism and degrowth, there is no consensus within degrowth circles whether it should explicitly position itself against capitalism. Various reasons are given for this although one is that as a 'social movement' degrowth emphasises principles of decentralisation and voluntarism rather than large-scale 'revolutionary' change (p. 62).

One of the longstanding criticism raised about degrowth is that in parts of the world, notably in the global south, there is insufficient prosperity to recommend degrowth (i.e. degrowth would be very harmful in the face of continued poverty). In response, the editors say that degrowth is necessary in the global north to "liberate ecological space" for the south to grow. However, they also say that degrowth in the global north aims to "liberate conceptual space" for countries in the global south to find "their own trajectories" – i.e. not simply copying practices in the north (p. 5). How this would happen – not least the (seemingly impossible) politics of it – is not discussed. In the end, one is left with a sense that degrowth is something which is being pursued at a grassroots level – eco-communities, cooperatives, community currencies, spending more time operating outside the wage labour system – and that these things are important and meaningful. However, it is hard to see what 'scaling up' would look like nor whether the editors of this book are interested in this at all.

DEGROWTH AND GREEN GROWTH IN COMPARATIVE PERSPECTIVE: STRENGTHS AND WEAKNESSES

By looking at green growth arguments alongside degrowth arguments, several things come into view. Firstly, we can see how the two approaches differ fundamentally regarding what technology can or cannot deliver. However, the question is can we adjudicate between their arguments? Degrowth advocates surely have a point when they invoke the Jevons Paradox (i.e. the idea that gains from cleaner technologies are often eroded by higher levels of consumption). They are also right to raise questions about how far any dematerialisation of the economy can be taken (e.g. there are limits to how much we can dematerialise, say, our homes or transport systems even if it is possible to use less materials or make them smarter and/or more energy efficient). However, the editors of the degrowth book reviewed here are much less convincing when they cite data detailing the (slow) speed at which decarbonisation has occurred

to date, concluding on this basis that future decarbonisation targets cannot be met. Moreover, one can imagine future scenarios where the Jevons Paradox may not apply (e.g. some post-carbon futures). In this respect, *Rethinking Capitalism* is more convincing in terms of setting out the way in which innovation and technology are likely to be able to help us tackle the environmental challenges we face. *Rethinking Capitalism* is also helpful in detailing the important role for the state in such any kind of 'green' transition. *Degrowth* is less convincing and comes across as ideological when it invokes old dependency theory arguments about the harmful effects of growth for 'the periphery', in turn failing to acknowledge contemporary research in this area. It is not that the development of some areas of the world is not happening at the expense of other areas but the picture is mixed and some development at the 'periphery' is almost certainly self-sustaining (Asche and Schuller 2008; Fantu and Cyril 2010; Gu et al 2016).

None of the books reviewed so far – either on the green growth or the degrowth side of the debate – say very much about the implications of their analysis for poverty and inequality. Such issues do not feature at all in the writing of Zenghelis and Perez. Instead, there is an untested assumption that innovation and technology will 'somehow' deliver their benefits universally. Moreover, *Degrowth* says nothing about the implications of degrowth in the global north – if it were to happen – on the poorest in the north. However, the lesson of the 2007-2008 financial crisis, and subsequent austerity, is that slower growth in the north falls disproportionately on the poorest (Peebles 2015). Lastly, *Degrowth* offers no insight into how degrowth in the north would occur (i.e. who would agree to it and in what circumstances?) such that it remains an entirely hypothetical notion.

We now consider our final text, asking – counter-intuitively – what green growth and degrowth have in common and what questions they ignore?

BREAKING OUT OF THE GREEN GROWTH vs DEGROWTH PARADIGM

In *Parallax of Growth*, Ole Bjerg, who is from the Copenhagen Business School, addresses specifically the 'standoff' between green growth and degrowth and finds both wanting. Instead of green growth and degrowth, Bjerg offers what he calls eco-analysis which seeks to create space for critical thinking in a climate dominated by a call to action. This is not because action is unimportant but rather because we need be "open and honest enough" to admit that we do not know what kind of action is required (p. 4).

Exploring the etymology of the words 'economy' and 'ecology', Bjerg notes that eco – i.e. what eco-nomy and eco-logy have in common – is derived from the Greek *oikos*, meaning household, house or habitat. So, eco-analysis is concerned with an analysis of "the place where life takes place" (p. 5). The book draws heavily on the work of Slavoj Zizek and his distinction between the real, the symbolic and the imaginary. For Bjerg, the eco- is the (elusive) 'real'. The economy and ecology are both symbolic realms and the imaginary is the 'ideology' which accompanies the symbolic, preventing us – most of the time – from seeing how things truly are.

In Zizek terms, there is always something traumatic about the real ('a traumatic real kernel'), which is too much for us to bear, which is why the symbolic and imaginary

exist. The traumatic real of the 'economy'. Bjerg says, is that value and price are not the same thing – contrary to what we say. However, if we do not proceed as if value and price are the same we come up against the law of impossible exchange and the economy cannot function. That is, we must be able to put a price on, say, a quantity of Honda motorbikes and a quantity of steel (i.e. the law of possible exchange) and say their 'value' is the same even though the grounds for saying this is questionable. The traumatic real of 'ecology', Bjerg says, is that there is no balance in nature and that human beings are not outside of nature – as ecology assumes – but are a part of it and are destroying it. This is traumatic, Bjerg says, because if humans are part of nature and destroying it, then it is less clear on what grounds one can appeal to humans to clean things up (p. 27).

Turning to the relationship between green growth and degrowth, Bjerg argues that even green growth critics are operating within the framework of the question posed by green growth advocates, namely how is it possible to continue to grow in a way which guarantees the continued availability of the natural assets on which growth depends. The only difference, he says, is that green growth critics answer the question in the negative as opposed to the affirmative (p. 145). Eco-analysis, by contrast, poses and seeks to answer a different question, namely why is it that we are so attached to growth in the first place. This approach is refreshing and one which one does not find in the other books.

In taking this line, Bjerg is not saying that green growth is not better than brown growth nor is he taking issue with degrowth's questioning of the merits of growth itself. However, understanding why we are so attached to growth is critical if we are ever going to move away from it. A failure to understand why we are so attached to growth lies behind the relatively poor take-up of environmental measures historically whether it be at a global or a personal level. For example, we have known what the problems are since the publication of the Brundtland Report in 1987 but 30 years on we are still debating many of the same issues and in large respects have not acted (pp. 35-36). Also relevant, in terms of our failure to act, is the disconnect between scientific knowledge and public perception. Eco-analysis does not deny the validity of scientific knowledge but it does seek to explain the disconnect between it and public perception. For Bjerg, a key issue is what he calls the 'peculiar ontology of the human subject', namely that human beings need a view of the world which offers "meaning and purpose" in relation to their "own being-in-the world" not just an objectivist scientific account. Ecology and science have not always fully grasped this, he says (pp. 146-151).

Drilling down into our attachment to growth, eco-analysis considers three key concepts, namely need, desire and drive. In terms of need, Bjerg notes that part of the justification for perpetual growth is the (asserted) need to feed current and future populations, particularly the poorest (p. 152). It is hard to argue with this, Bjerg says: clearly the poor need feeding both now and in the future. However, we need to question the often-asserted connection between growth and 'the essential needs of the poor'. Why? Because ironically our commitment to feeding the poor, relying as it almost certainly will on practices which are destructive both of eco-systems and viable communities, will likely have the reverse effect. "The poor," Bjerg writes, exploring the case of Monsanto, "are in effect taken hostage by corporate interests in the struggle to define sustainable development". If the question is always posed as 'how can we

move towards ecologically sustainable lifestyles and production *in order* to be able to feed a future global population in excess of 9 billion?', it is as if the second part of the question cancels out the first part. Eco-analysis wants us to concentrate on the first part of the question so as to think about solutions which point beyond the current growth imperative (p. 161). Also important is that the alleged 'iron bond' between growth and the needs of the poor leaves unexplored the (highly open) question of whether such growth would actually help the poorest (because of the uneven distribution of growth).

The second concept Bjerg looks at to understand our attachment to growth is desire. As we might expect, desire operates at the level of the individual consumer. However, contrary to what neo-classical economics claims, it is not the case that 'the economy' is simply 'responding to' demand (or desire) – although this is partly true. Rather, the economy itself *creates* desire. Importantly, this points to a flaw in the green growth arguments, namely that technology does not just offer a route out of the environmental crisis as they claim but also fashions *new* wants and desires (e.g. twenty-five years ago none of us knew that we wanted to send and receive emails and texts every few minutes).

Also crucial in understanding desire is the way in which the introduction of money has changed our very constitution as economic subjects. Here Bjerg invokes the idea of 'economic castration', namely that with money, production and consumption get separated (i.e. most of us do not consume the fruits of our labour). However, the consequences of this are more profound than we realise. That is, we no longer just desire 'things', we desire *money* to be able to access things ("the desire to be included in the economy as a whole") (p. 167). The result is that money becomes the cause of desire itself and because the desire for money cannot be exchanged for money, it remains unsatisfied (pp. 162-168).

The third and final dimension to Bjerg's investigation of our growth attachment is what he calls 'drive'. Drive operates at a systemic level and captures best of all the "self-propelling nature of contemporary growth capitalism" (p. 193). To explain what he means, Bjerg gives the example of a compulsive gambler. In a gambling habit, which is under control, the aim is to win money. However, when the habit gets out of control – like any addictive behaviour – this goal gets lost, and the aim of gambling is simply to gamble (i.e. the gambler 'finds satisfaction in endlessly repeating the same failed gesture') (pp. 193-194). Underlining the contrast between desire and drive, Bjerg says that while desire has a goal, the rhythm of drive is simply "failed repetition" (p. 194). To understand our fixation with growth we need to realise that something similar is going on in relation to the economy. That is, our desire for perpetual economic growth is connected to our financial system where money is created out of interest-bearing debt by private banks – growth simply for its own sake (p. 197). The operating of our financial system, Bjerg concludes, is where we need to focus our attention if we really want to save the planet. This is striking and not an insight we get either from green growth or degrowth.

CONCLUSION

By probing the question of why we are so attached to growth, *Parallax of Growth* introduces a new element to the debate which is not found in any of the other books

reviewed. *Green Capital* and *Rethinking Capitalism* do not ask this question because they believe that technology and the knowledge economy will continue to drive growth but in a more sustainable manner. Therefore, growth itself is not a problem. *Degrowth*, on the other hand, while being very clear that our attachment to growth is harmful, ironically leaves unexplored the question of why we are so attached to it. Given the depth of our attachment to growth – deep within the human psyche and embedded in our economic system – this is at the very least a strategic error, which will make far-reaching institutional and behaviour change next to impossible.

In seeking to adjudicate between the different positions reviewed here, we would wish to emphasise that we probably should pursue technology and innovation as a route out of our current difficulties, and move to price natural capital. However, if we do not probe the deeper question of why growth is so difficult to let go of, it is unlikely that these or any other responses to environmental challenges will ever go far enough. While there is clearly overlap with some earlier work (see Storm 2009), a key finding of this essay is that it is important to understand better our constitution as economic subjects and particularly the role money plays in the perpetuation of our desires. More than this, we need to scrutinise more closely the way in which the global financial system operates, fuelling, as it does, a drive for growth for no other reason than growth itself. To seriously address this dynamic of the financial sector requires far more radical reform than anything that has been considered post-2007/08, and yet the obstacles to achieving this are formidable. However, unless we take action here, tackling the environmental challenges we face will continue to be an uphill struggle just as it has been since the publication of the Brundtland Report some thirty years ago.

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